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Summit Envirosolutions®

May 21, 1997

Mr. Joe Lopez, R.E.A.
Praxair, Inc.
1785 Old Oakland Road
San Jose, California 95131

Ms. Louise Bardy
Washington State Department of Ecology
3190 160th Avenue SE
Bellevue, Washington 98008

Subject: Results of the Fourth Quarterly Groundwater Monitoring Event
Former Liquid Carbonic Industries Facility, Seattle, Washington
Summit Project No. 0841-001 (formerly 961602)

Dear Mr. Lopez and Ms. Bardy:

This letter presents the results of the fourth quarterly groundwater monitoring event performed on May 1, 1997 by Summit Envirosolutions®, Inc. (Summit) at the subject site. Groundwater monitoring is being performed at the site subsequent to site remediation per Washington State Department of Ecology (Ecology) requirements. Previous quarterly groundwater monitoring events were performed on May 3, 1996, September 27, 1996, and January 13, 1997. A groundwater monitoring event was also performed in March 1996 prior to initiating quarterly events per Ecology requirements.

Groundwater elevation data, sampling and chemical analyses methods, results of data evaluation, and Summit's conclusions and recommendations regarding the most recent groundwater monitoring event are described in the following paragraphs. Comparisons between data from the most recent event and previous events is also provided.

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Groundwater Elevation Data

Groundwater monitoring well locations, groundwater elevations, and the inferred direction of groundwater flow are illustrated on Figure 1 (attached). Groundwater elevations are summarized in Table 1. Water level measurements were measured in each well using an electronic water level indicator prior to purging and sampling. Based on Summit's water level measurements, groundwater elevations were approximately 0.25 to 0.5 feet higher than those recorded during January 1997.

Based on water levels measured on May 1, 1997, the inferred direction of groundwater flow during sampling was to the southwest at a gradient of approximately 0.0037 foot per foot. This gradient and direction are generally consistent with data from previous groundwater monitoring events.

Groundwater Sampling and Chemical Analyses

Groundwater samples were collected from each of the five existing wells on May 1, 1997. Approximately 10 gallons of water were purged from each well prior to sampling. Purge water is being temporarily stored inside the building in 55-gallon drums. Samples were collected using disposable teflon bailers. Samples were placed in unused sample containers provided by an independent laboratory, labeled, and placed in a cooler with "blue ice" until delivered to the laboratory under proper chain-of-custody procedures.

Samples were submitted to North Creek Analytical of Bothell, Washington for the following chemical analyses:

- Total petroleum hydrocarbons as diesel and heavy oil (TPH-D and TPH-O, respectively) using Ecology method WTPH-D extended;
- RCRA (8) total metals using EPA method 6010 or 7000 series; and,
- Polynuclear aromatic hydrocarbons (PAH) using EPA method 8310.

Copies of original laboratory reports describing the chemical analyses results are attached. Chemical analyses results for TPH, total metals, and PAH are summarized in Tables 2, 3, and 4, respectively.

Chemical Analyses Results and Data Evaluation

Chemical analyses results for TPH concentrations are summarized in Table 2. Chemical analyses detected concentrations of TPH-D in groundwater samples collected from MW-2, MW-3, and MW-5. The TPH-D concentrations ranged from 263 to 498 micrograms per liter (parts per billion, ppb). These concentrations do not exceed site-specific cleanup levels established by Ecology.

Concentrations of TPH-O were not detected in groundwater samples collected on May 1, 1997. The lack of detected TPH-O concentrations is consistent with data for groundwater samples collected in September 1996 and January 1997.

Chemical analyses results for total metals concentrations are summarized in Table 3. Chemical analyses detected concentrations of barium, arsenic, and lead in groundwater samples collected from one or more wells. Detected metals concentrations are further described in the following paragraphs.

Barium was detected at a concentration of 10.9 ppb in the sample collected from MW-5. A cleanup level for barium is not listed in the Model Toxics Control Act (MTCA) Method A table. Barium concentrations have decreased in frequency and magnitude based on chemical analyses results from the last three quarterly sampling and analyses events.

Arsenic was detected in samples collected from MW-1, MW-2, MW-4, and MW-5 at concentrations ranging from 5.10 to 7.90 ppb. These concentrations exceed the MTCA Method A cleanup level of 5.0 ppb. Arsenic concentrations have increased in frequency and magnitude based on chemical analyses results from the last three quarterly sampling and analyses events. In addition, arsenic was detected at 5.10 ppb in the sample collected from the upgradient well MW-1.

Lead was detected in samples collected from MW-3, MW-4, and MW-5 at concentrations ranging from 2.10 to 3.97. These concentrations do not exceed the MTCA Method A cleanup level. Detected concentrations of lead appear to be periodic or sporadic based on the chemical analyses results from March 1996 to May 1997.

Chemical analyses results for PAH concentrations are summarized in Table 4. Concentrations of PAH were not detected in the groundwater samples at concentrations at or above the method reporting limits. The absence of PAH concentrations above the method reporting limits is consistent with data for groundwater samples collected in September 1996 and January 1997. Groundwater samples were not submitted for PAH analysis prior to September 1996.

Conclusions

Concentrations of TPH-D were detected in MW-2, MW-3, and MW-5 at concentrations which did not exceed site-specific cleanup levels. Concentrations of TPH-O were not detected in the groundwater samples. Concentrations of TPH-O have not been detected during the last four quarterly groundwater monitoring events.

Barium was detected in the sample collected from MW-5, at a concentration of 10.9 ppb. A cleanup level for barium is not listed in the MTCA Method A table. Arsenic was detected in samples collected from MW-1, MW-2, MW-4, and MW-5 at concentrations ranging from 5.10 to 7.90 ppb. The arsenic concentrations slightly exceed the cleanup level of 5.0 ppb. The general trend in the total metals data summarized in Table 3 indicates that the frequency and magnitude

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of total metals concentrations is decreasing for each analyte except arsenic. The data presented in Table 4 indicate that arsenic concentrations are increasing in frequency and magnitude. In addition, Arsenic was detected in the upgradient well MW-1 at a concentration of 5.10 ppb. Prior to this groundwater monitoring event, arsenic was not detected in samples collected from MW-1. The anomalous trend in the arsenic data and the detection of arsenic in the upgradient well MW-1 suggest an off site source for some, if not the majority, of arsenic detected in the May 1, 1997 groundwater samples.

Lead was detected in samples collected from MW-3, MW-4, and MW-5 at concentrations ranging from 2.10 to 3.97 ppb. These concentrations do not exceed the MTCA Method A cleanup level. Data from March 1996 to May 1997 indicate periodic and/or seasonal fluctuations in lead concentrations at each of the five wells. The changes in lead concentrations may be in response to seasonal fluctuations in groundwater elevation. Data from March 1996 to May 1997 indicate lead concentrations have not exceeded the MTCA Method A cleanup level during that time period.

Polynuclear aromatic hydrocarbons were not detected in May 1, 1997 groundwater samples at concentrations at or above the method reporting limits. This marks the third consecutive quarterly groundwater monitoring event in which PAH concentrations were not detected in the groundwater samples. These data are consistent with chemical analyses results for soil samples collected during site remediation which indicated no detectable PAH concentrations at or above the method reporting limits.

Recommendations

Summit recommends groundwater monitoring be revised based on the chemical analyses results for the three consecutive groundwater monitoring events performed since May 1996. Summit recommends future groundwater monitoring events be performed on a quarterly basis at each of the five existing wells. Summit recommends submitting the groundwater samples for the following chemical analyses:

- TPH-D using Ecology method WTPH-D; and,
- Total arsenic, and lead using EPA method 6010 and 7000 series methods.

Summit believes the proposed revisions will not compromise the objectives of groundwater monitoring, which are to monitor constituents of concern and groundwater flow conditions beneath the site. Summit believes the proposed revisions will allow these goals to be achieved, and allow data evaluation to focus on the constituents of concern which appear to be prevalent based on four consecutive groundwater monitoring events.

Please consider Summit's recommendations and communicate your comments to me at your earliest convenience. If you have questions regarding the contents of this letter, or wish to discuss the results of a groundwater monitoring event(s) in more detail, please call me at 206/646-0808.

Sincerely,

Summit Envirosolutions, Inc.

Jeffrey S. Thompson
Project Manager

Attachments

TABLE 1
Groundwater Elevation Data
January 3, 1997
Former Liquid Carbonic Facility, Seattle, Washington
Summit Project No. 0841-001

Monitoring Well Number	Top of Casing Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)
MW-1	99.21	9.21	90.00
MW-2	98.73	9.62	89.11
MW-3	98.48	9.07	89.41
MW-4	98.47	9.06	89.41
MW-5	98.47	8.96	89.51

Notes
Casing elevations referenced to a temporary benchmark with an elevation of 100.00 feet.

TABLE 2
Total Petroleum Hydrocarbon (TPH) Concentrations in Groundwater Samples
May 1996, September 1996, January 1997, May 1997
Former Liquid Carbonic Facility, Seattle, Washington
Summit Project No. 0841-001

Sample Location	May 1996		September 1996		January 1997		May 1997	
	Diesel (ppb)	Heavy Oil (ppb)	Diesel (ppb)	Heavy Oil (ppb)	Diesel (ppb)	Heavy Oil (ppb)	Diesel (ppb)	Heavy Oil (ppb)
MW-1	ND	ND	ND	ND	ND	ND	ND	ND
MW-2	640	ND	ND	ND	256	ND	408	ND
MW-3	ND	ND	ND	ND	667	ND	ND	ND
MW-4	420	ND	ND	ND	ND	ND	263	ND
MW-5	ND	ND	ND	ND	508	ND	498	ND
Site-Specific Cleanup Levels: Diesel = 10,000.0 ppb Heavy Oil = 15,000.0 ppb								

Notes
ppb = parts per billion (micrograms per liter, ug/L).
Sample concentrations in bold type meet or exceed site-specific cleanup levels approved by Ecology.
ND = not detected at or above the method reporting limit.

TABLE 3
Total Metals Concentrations in Groundwater Samples
March 1995, September 1996, January 1997, May 1997
Former Liquid Carbonic Facility, Seattle, Washington
Summit Project No. 0841-001

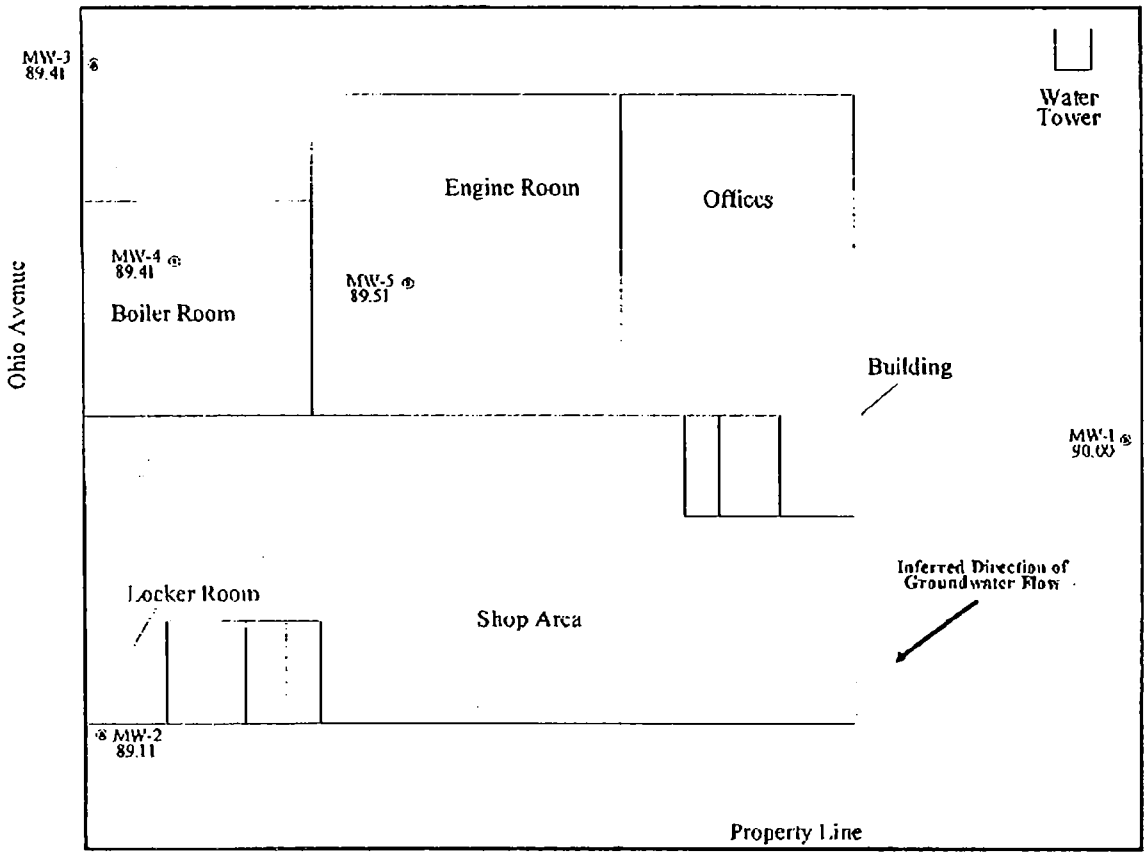
Sampling Date / Sample Location	Barium	Cadmium	Chromium	Arsenic	Lead	Mercury	Selenium	Silver
March 29, 1995								
MW-1	140	ND	45	ND	ND	ND	ND	ND
MW-2	100	ND	38	ND	ND	ND	ND	ND
MW-3	300	ND	75	ND	ND	ND	ND	ND
MW-4	950	ND	200	ND	ND	2.0	ND	ND
MW-5	140	ND	70	ND	ND	ND	ND	ND
September 27, 1996								
MW-1	11.9	ND	2.00	ND	2.44	ND	ND	ND
MW-2	ND	ND	10.8	5.50	2.42	ND	ND	ND
MW-3	27.0	ND	15.2	4.50	4.72	ND	ND	ND
MW-4	26.8	ND	18.3	ND	2.91	ND	ND	ND
MW-5	ND	ND	ND	4.00	2.32	ND	ND	ND
January 10, 1997								
MW-1	12.5	ND	ND	ND	ND	ND	ND	ND
MW-2	19.8	ND	ND	ND	ND	ND	ND	ND
MW-3	ND	ND	ND	ND	ND	ND	ND	ND
MW-4	36.7	ND	ND	ND	ND	ND	ND	ND
MW-5	27.5	ND	ND	ND	ND	ND	ND	ND
May 1, 1997								
MW-1	ND	ND	ND	5.10	ND	ND	ND	ND
MW-2	ND	ND	ND	7.90	ND	ND	ND	ND
MW-3	ND	ND	ND	ND	2.10	ND	ND	ND
MW-4	ND	ND	ND	5.40	3.97	ND	ND	ND
MW-5	10.9	ND	ND	7.40	2.16	ND	ND	ND
Cleanup Level	**NL**	**5.0**	**50.0**	**5.0**	**5.0**	**2.0**	**NL**	**NL**

Notes
Groundwater samples collected during May 1996 were not analyzed for total metals. Data from March 1995 are presented for informational purposes.
Concentrations reported in micrograms per liter (ug/l), parts per billion.
ND = not detected at or above the detection level of the testing instrument.
NA = not analyzed. NL = not listed. < = less than.
Cleanup levels = MTCA method A cleanup levels, (Washington Administrative Code (WAC) 173-340, the Model Toxics Control Act).

TABLE 4
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Groundwater Samples
May 1997
Liquid Carbonic Facility, Seattle, Washington
Summit Project No. 0841-001

Polynuclear Aromatic Hydrocarbons	Sample Concentrations and Method Reporting Limits (ppb)					
	MW-1	MW-2	MW-3	MW-4	MW-5	MRL
Acenaphthene	ND	ND	ND	ND	ND	1.00
Acenaphthylene	ND	ND	ND	ND	ND	1.00
Anthracene	ND	ND	ND	ND	ND	1.00
Benzo(a)anthracene	ND	ND	ND	ND	ND	0.100
Benzo(a)pyrene	ND	ND	ND	ND	ND	0.100
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	0.100
Benzo(ghi)perylene	ND	ND	ND	ND	ND	0.100
Benzo(k)fluoranthenenc	ND	ND	ND	ND	ND	0.100
Chrysene	ND	ND	ND	ND	ND	0.100
Dibenzo(a,h)anthracenc	ND	ND	ND	ND	ND	0.100
Flouranthene	ND	ND	ND	ND	ND	0.100
Fluorene	ND	ND	ND	ND	ND	1.00
Indeno(1,2,3,-cd)pyrene	ND	ND	ND	ND	ND	0.100
Naphthalene	ND	ND	ND	ND	ND	1.00
Phenanthrene	ND	ND	ND	ND	ND	1.00
Pyrene	ND	ND	ND	ND	ND	1.00

Notes
ppb = parts per billion (micrograms per liter, ug/l).
ND = not detected at or above the method reporting limit (MRL).



Legend

MW-1 90.00 Monitoring Well Location and May 1, 1997 Groundwater Elevation

North

Monitoring Well Locations and Groundwater Elevations
Former Liquid Carbonic Industries Facility
Seattle, Washington

Figure 1

law files
- HSTE/E
- Seattle, WA
- (24)

Summit Envirosolutions®

May 30, 1997

JUN _ 5 1997

Mr. Joe Lopez, R.E.A.
Praxair, Inc.
1785 Old Oakland Road
San Jose, California 95131

Subject: Results of the Fourth Quarterly Groundwater Monitoring Event
Former Liquid Carbonic Industries Facility, Seattle, Washington
Summit Project No. 0841-001 (formerly 961602)

Dear Mr. Lopez:

This letter presents the results of the fourth quarterly groundwater monitoring event performed on May 1, 1997 by Summit Envirosolutions®, Inc. (Summit) at the subject site. Groundwater monitoring is being performed at the site subsequent to site remediation per Washington State Department of Ecology (Ecology) requirements. Previous quarterly groundwater monitoring events were performed on May 3, 1996, September 27, 1996, and January 13, 1997. A groundwater monitoring event was also performed in March 1996 prior to initiating quarterly events per Ecology requirements.

Groundwater elevation data, chemical analyses and data evaluation results, and Summit's conclusions and recommendations regarding the fourth quarterly groundwater monitoring event are described in the following paragraphs. A comparison between data from this event and previous events is also provided.

Groundwater Elevation Data

Water level measurements were measured in each well using an electronic water level indicator prior to purging and sampling. Based on Summit's water level measurements, groundwater elevations were approximately 0.25 to 0.5 feet higher than those recorded during January 1997. Groundwater monitoring well locations, groundwater elevations, and the inferred direction of groundwater flow are illustrated on Figure 1. Groundwater elevations are summarized in Table 1.

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Based on water levels measured on May 1, 1997, the inferred direction of groundwater flow during sampling was to the southwest at a gradient of approximately 0.0037 foot per foot. This gradient and direction are generally consistent with data from previous groundwater monitoring events.

Groundwater Sampling and Chemical Analyses

Groundwater samples were collected from each of the five existing wells on May 1, 1997. Approximately 10 gallons of water were purged from each well prior to sampling. Purge water is being temporarily stored inside the building in 55-gallon drums. Samples were collected using disposable teflon bailers. Samples were placed in unused sample containers provided by an independent laboratory, labeled, and placed in a cooler with "blue ice" until delivered to the laboratory under proper chain-of-custody procedures.

Samples were submitted to North Creek Analytical of Bothell, Washington for the following chemical analyses:

- Total petroleum hydrocarbons as diesel and heavy oil (TPH-D and TPH-O, respectively) using Ecology method WTPH-D extended;
- RCRA (8) total metals using EPA method 6010 or 7000 series; and,
- Polynuclear aromatic hydrocarbons (PAH) using EPA method 8310.

Copies of original laboratory reports describing the chemical analyses results are attached. Chemical analyses results for TPH, total metals, and PAH are summarized in Tables 2, 3, and 4, respectively.

Chemical Analyses Results and Data Evaluation

Chemical analyses results for TPH concentrations are summarized in Table 2. Chemical analyses detected concentrations of TPH-D in groundwater samples collected from MW-2, MW-3, and MW-5. The TPH-D concentrations ranged from 263 to 498 micrograms per liter (parts per billion, ppb). These concentrations do not exceed site-specific cleanup levels established by Ecology.

Concentrations of TPH-O were not detected in groundwater samples collected on May 1, 1997. The lack of detected TPH-O concentrations is consistent with data for groundwater samples collected in September 1996 and January 1997.

Chemical analyses results for total metals concentrations are summarized in Table 3. Chemical analyses detected concentrations of barium, arsenic, and lead in groundwater samples collected from one or more wells. Detected metals concentrations are further described in the following paragraphs.

Barium was detected at a concentration of 10.9 ppb in the sample collected from MW-5. A cleanup level for barium is not listed in the Model Toxics Control Act (MTCA) Method A table. Barium concentrations have decreased in frequency and magnitude based on chemical analyses results from the last three quarterly sampling and analyses events.

Arsenic was detected in samples collected from MW-1, MW-2, MW-4, and MW-5 at concentrations ranging from 5.10 to 7.90 ppb. These concentrations exceed the MTCA Method A cleanup level of 5.0 ppb. Arsenic concentrations have increased in frequency and magnitude based on chemical analyses results from the last three quarterly sampling and analyses events. In addition, arsenic was detected at 5.10 ppb in the sample collected from the upgradient well MW-1.

Lead was detected in samples collected from MW-3, MW-4, and MW-5 at concentrations ranging from 2.10 to 3.97. These concentrations do not exceed the MTCA Method A cleanup level. Detected concentrations of lead appear to be periodic or sporadic based on the chemical analyses results from March 1996 to May 1997.

Chemical analyses results for PAH concentrations are summarized in Table 4. Concentrations of PAH were not detected in the groundwater samples at concentrations at or above the method reporting limits. The absence of PAH concentrations above the method reporting limits is consistent with data for groundwater samples collected in September 1996 and January 1997. Groundwater samples were not submitted for PAH analysis prior to September 1996.

Conclusions

Concentrations of TPH-D were detected in MW-2, MW-3, and MW-5 at concentrations which did not exceed site-specific cleanup levels. Concentrations of TPH-O were not detected in the groundwater samples. Concentrations of TPH-O have not been detected during the last four quarterly groundwater monitoring events.

Barium was detected in the sample collected from MW-5, at a concentration of 10.9 ppb. A cleanup level for barium is not listed in the MTCA Method A table. Arsenic was detected in samples collected from MW-1, MW-2, MW-4, and MW-5 at concentrations ranging from 5.10 to 7.90 ppb. The arsenic concentrations slightly exceed the cleanup level of 5.0 ppb. The general trend in the total metals data summarized in Table 3 indicates that the frequency and magnitude of total metals concentrations is decreasing for each analyte except arsenic. The data presented in Table 4 indicate that arsenic concentrations are increasing in frequency and magnitude. In addition, Arsenic was detected in the upgradient well MW-1 at a concentration of 5.10 ppb. Prior to this groundwater monitoring event, arsenic was not detected in samples collected from MW-1. The anomalous trend in the arsenic data and the detection of arsenic in the upgradient well MW-1 suggest an off site source for some, if not the majority, of arsenic detected in the May 1, 1997 groundwater samples.

Lead was detected in samples collected from MW-3, MW-4, and MW-5 at concentrations ranging from 2.10 to 3.97 ppb. These concentrations do not exceed the MTCA Method A cleanup level. Data from March 1996 to May 1997 indicate periodic and/or seasonal fluctuations in lead concentrations at each of the five wells. The changes in lead concentrations may be in response to seasonal fluctuations in groundwater elevation. Data from March 1996 to May 1997 indicate lead concentrations have not exceeded the MTCA Method A cleanup level during that time period.

Polynuclear aromatic hydrocarbons were not detected in May 1, 1997 groundwater samples at concentrations at or above the method reporting limits. This marks the third consecutive quarterly groundwater monitoring event in which PAH concentrations were not detected in the groundwater samples. These data are consistent with chemical analyses results for soil samples collected during site remediation which indicated no detectable PAH concentrations at or above the method reporting limits.

Recommendations

Summit recommends maintaining the existing schedule of quarterly groundwater monitoring events. However, Summit recommends revising the existing chemical analyses requirements. This recommendation is based on chemical analyses results for the four quarterly groundwater monitoring events performed from May 1996 to May 1997. Specifically, we recommend submitting samples from future quarterly groundwater monitoring events for the following chemical analyses:

- TPH-D using Ecology method WTPH-D; and,
- Total arsenic, and lead using EPA method 6010 and 7000 series methods.

Summit believes the proposed revisions will not compromise the objectives of groundwater monitoring, which are to monitor constituents of concern and groundwater flow conditions beneath the site. Summit is confident that the proposed revisions will allow these goals to be achieved, and allow data evaluation to focus on the constituents of concern which appear to be prevalent based on four consecutive groundwater monitoring events.

Please consider Summit's recommendations and communicate your comments to me at your earliest convenience. If you have questions regarding the contents of this letter, or wish to discuss the results of a groundwater monitoring event(s) in more detail, please call me at 206/646-0808.

Sincerely,

Summit Envirosolutions, Inc.

Jeffrey S. Thompson
Project Manager

Attachments

cc: Ms. Louise Bardy, Washington State Department of Ecology
Mr. Richard Tisch, Praxair, Inc. Law Department

TABLE 1
Groundwater Elevation Data
January 3, 1997
Former Liquid Carbonic Facility, Seattle, Washington
Summit Project No. 0841-001

Monitoring Well Number	Top of Casing Elevation (feet)	Depth to Groundwater (feet)	Groundwater Elevation (feet)
MW-1	99.21	9.21	90.00
MW-2	98.73	9.62	89.11
MW-3	98.48	9.07	89.41
MW-4	98.47	9.06	89.41
MW-5	98.47	8.96	89.51

Notes
Casing elevations referenced to a temporary benchmark with an elevation of 100.00 feet.

TABLE 2
Total Petroleum Hydrocarbon (TPH) Concentrations in Groundwater Samples
May 1996, September 1996, January 1997, May 1997
Former Liquid Carbonic Facility, Seattle, Washington
Summit Project No. 0841-001

Sample Location	May 1996		September 1996		January 1997		May 1997	
	Diesel (ppb)	Heavy Oil (ppb)	Diesel (ppb)	Heavy Oil (ppb)	Diesel (ppb)	Heavy Oil (ppb)	Diesel (ppb)	Heavy Oil (ppb)
MW-1	ND	ND	ND	ND	ND	ND	ND	ND
MW-2	640	ND	ND	ND	256	ND	408	ND
MW-3	ND	ND	ND	ND	667	ND	ND	ND
MW-4	420	ND	ND	ND	ND	ND	263	ND
MW-5	ND	ND	ND	ND	508	ND	498	ND
Site-Specific Cleanup Levels: Diesel = 10,000.0 ppb Heavy Oil = 15,000.0 ppb								

Notes
ppb = parts per billion (micrograms per liter, ug/L).
Sample concentrations in bold type meet or exceed site-specific cleanup levels approved by Ecology.
ND = not detected at or above the method reporting limit.

TABLE 3
Total Metals Concentrations in Groundwater Samples
March 1995, September 1996, January 1997, May 1997
Former Liquid Carbonic Facility, Seattle, Washington
Summit Project No. 0841-001

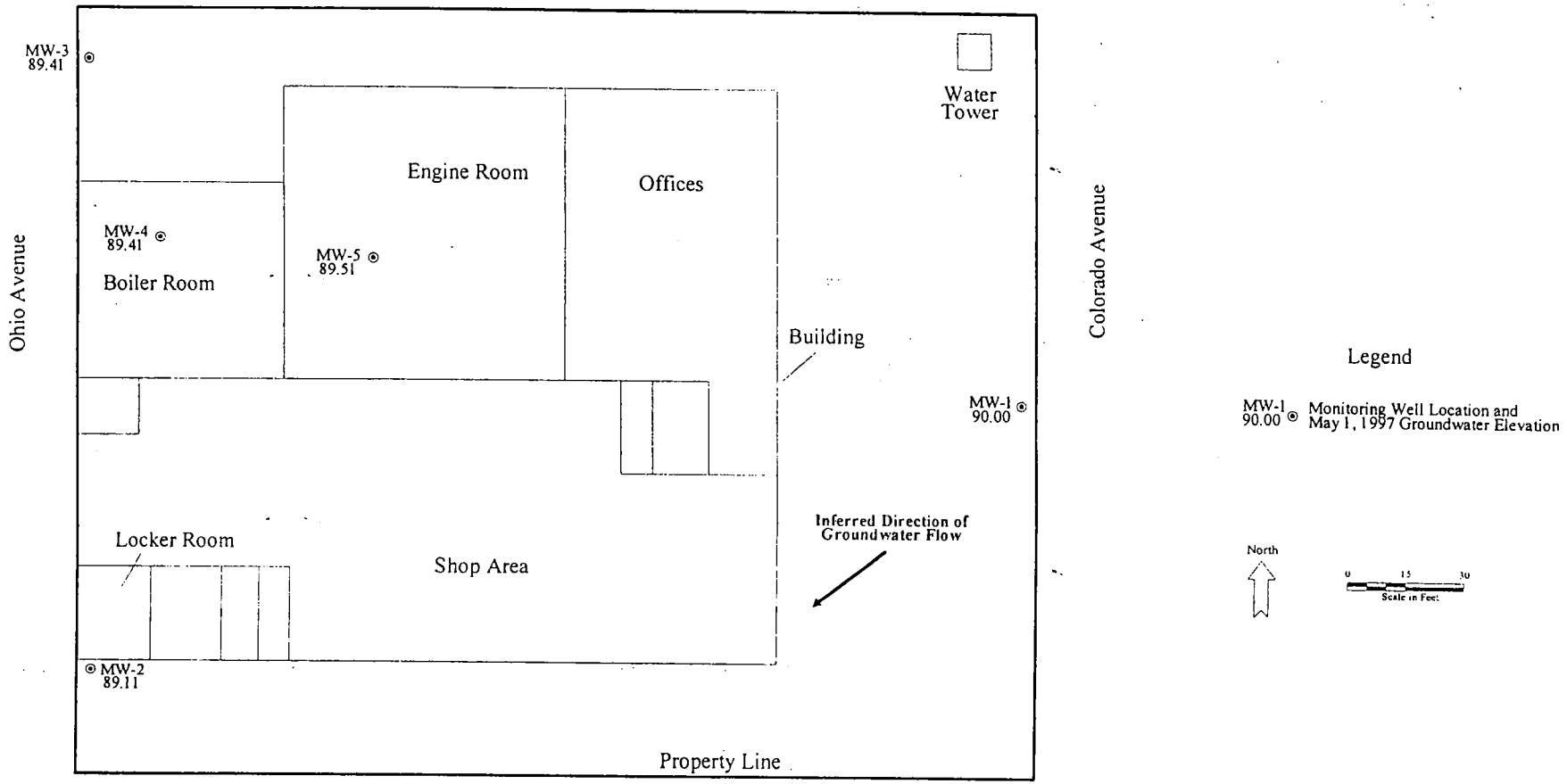
Sampling Date Sample Location	Barium	Cadmium	Chromium	Arsenic	Lead	Mercury	Selenium	Silver
March 29, 1995								
MW-1	140	ND	45	ND	ND	ND	ND	ND
MW-2	100	ND	38	ND	ND	ND	ND	ND
MW-3	300	ND	75	ND	ND	ND	ND	ND
MW-4	950	ND	200	ND	ND	2.0	ND	ND
MW-5	140	ND	70	ND	ND	ND	ND	ND
September 27, 1996								
MW-1	11.9	ND	2.00	ND	2.44	ND	ND	ND
MW-2	ND	ND	10.8	5.50	2.42	ND	ND	ND
MW-3	27.0	ND	15.2	4.50	4.72	ND	ND	ND
MW-4	26.8	ND	18.3	ND	2.91	ND	ND	ND
MW-5	ND	ND	ND	4.00	2.32	ND	ND	ND
January 10, 1997								
MW-1	12.5	ND	ND	ND	ND	ND	ND	ND
MW-2	19.8	ND	ND	ND	ND	ND	ND	ND
MW-3	ND	ND	ND	ND	ND	ND	ND	ND
MW-4	36.7	ND	ND	ND	ND	ND	ND	ND
MW-5	27.5	ND	ND	ND	ND	ND	ND	ND
May 1, 1997								
MW-1	ND	ND	ND	5.10	ND	ND	ND	ND
MW-2	ND	ND	ND	7.90	ND	ND	ND	ND
MW-3	ND	ND	ND	ND	2.10	ND	ND	ND
MW-4	ND	ND	ND	5.40	3.97	ND	ND	ND
MW-5	10.9	ND	ND	7.40	2.16	ND	ND	ND
Cleanup Level	**NL**	**5.0**	**50.0**	**5.0**	**5.0**	**2.0**	**NL**	**NL**

Notes
Groundwater samples collected during May 1996 were not analyzed for total metals. Data from March 1995 are presented for informational purposes.
Concentrations reported in micrograms per liter (ug/l), parts per billion.
ND = not detected at or above the detection level of the testing instrument.
NA = not analyzed. NL = not listed. < = less than.
Cleanup levels = MTCA method A cleanup levels, [Washington Administrative Code (WAC) 173-340, the Model Toxics Control Act].

TABLE 4
Polynuclear Aromatic Hydrocarbon (PAH) Concentrations in Groundwater Samples
May 1997
Liquid Carbonic Facility, Seattle, Washington
Summit Project No. 0841-001

Polynuclear Aromatic Hydrocarbons	Sample Concentrations and Method Reporting Limits (ppb)					
	MW-1	MW-2	MW-3	MW-4	MW-5	MRL
Acenaphthene	ND	ND	ND	ND	ND	1.00
Acenaphthylene	ND	ND	ND	ND	ND	1.00
Anthracene	ND	ND	ND	ND	ND	1.00
Benzo(a)anthracene	ND	ND	ND	ND	ND	0.100
Benzo(a)pyrene	ND	ND	ND	ND	ND	0.100
Benzo(b)fluoranthene	ND	ND	ND	ND	ND	0.100
Benzo(ghi)perylene	ND	ND	ND	ND	ND	0.100
Benzo(k)fluoranthenene	ND	ND	ND	ND	ND	0.100
Chrysene	ND	ND	ND	ND	ND	0.100
Dibenzo(a,h)anthracene	ND	ND	ND	ND	ND	0.100
Flouranthene	ND	ND	ND	ND	ND	0.100
Fluorene	ND	ND	ND	ND	ND	1.00
Indeno(1,2,3,-cd)pyrene	ND	ND	ND	ND	ND	0.100
Naphthalene	ND	ND	ND	ND	ND	1.00
Phenanthrene	ND	ND	ND	ND	ND	1.00
Pyrene	ND	ND	ND	ND	ND	1.00

Notes
ppb = parts per billion (micrograms per liter, ug/l).
ND = not detected at or above the method reporting limit (MRL).



Monitoring Well Locations and Groundwater Elevations
Former Liquid Carbonic Industries Facility
Seattle, Washington

Figure 1

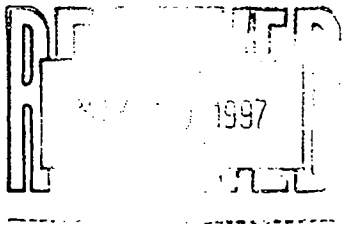
NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ▪ (206) 481-9200 ▪ FAX 485-2992
SPOKANE ▪ (509) 924-9200 ▪ FAX 924-9290
PORTLAND ▪ (503) 643-9200 ▪ FAX 644-2202

Summit Envirosolutions	Project: Liquid Carbonic	Sampled: 5/1/97
1800 112th Ave. N.E., Ste 312	Project Number: 0841-001	Received: 5/1/97
Bellevue, WA 98004	Project Manager: Jeff Thompson	Reported: 5/15/97 18:00

ANALYTICAL REPORT FOR SAMPLES:

Sample Description	Laboratory Sample Number	Sample Matrix	Date Sampled
LC-MW1-050197	B705030-01	Water	5/1/97
LC-MW2-050197	B705030-02	Water	5/1/97
LC-MW3-050197	B705030-03	Water	5/1/97
LC-MW4-050197	B705030-04	Water	5/1/97
LC-MW5-050197	B705030-05	Water	5/1/97



NORTH CREEK ANALYTICAL
Environmental Laboratory Services

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PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Summit Envirosolutions	Project:	Liquid Carbonic	Sampled: 5/1/97
1800 112th Ave. N.E., Ste 312	Project Number:	0841-001	Received: 5/1/97
Bellevue, WA 98004	Project Manager:	Jeff Thompson	Reported: 5/15/97 18:00

Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended)
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
LC-MW1-050197			**B705030-01**				**Water**	
Diesel Range Hydrocarbons	0570028	5/2/97	5/6/97		0.250	ND	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*76.7*	*%*	
LC-MW2-050197			**B705030-02**				**Water**	
Diesel Range Hydrocarbons	0570028	5/2/97	5/6/97		0.250	**0.408**	mg/l	I
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*83.3*	*%*	
LC-MW3-050197			**B705030-03**				**Water**	
Diesel Range Hydrocarbons	0570028	5/2/97	5/6/97		0.250	ND	mg/l	
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*79.4*	*%*	
LC-MW4-050197			**B705030-04**				**Water**	
Diesel Range Hydrocarbons	0570028	5/2/97	5/6/97		0.250	**0.263**	mg/l	I
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*83.3*	*%*	
LC-MW5-050197			**B705030-05**				**Water**	
Diesel Range Hydrocarbons	0570028	5/2/97	5/6/97		0.250	**0.498**	mg/l	I
Heavy Oil Range Hydrocarbons	"	"	"		0.750	ND	"	
Surrogate: 2-FBP	"	"	"	*50.0-150*		*79.7*	*%*	

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Summit Envirosolutions	Project:	Liquid Carbonic	Sampled: 5/1/97
1800 112th Ave. N.E., Ste 312	Project Number:	0841-001	Received: 5/1/97
Bellevue, WA 98004	Project Manager:	Jeff Thompson	Reported: 5/15/97 18:00

Total Metals by EPA 6010/7000 Series Methods
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
LC-MW1-050197			**B705030-01**				**Water**	
Barium	0570087	5/5/97	5/6/97	EPA 6010A	0.0100	ND	mg/l	
Cadmium	"	"	"	EPA 6010A	0.00500	ND	"	
Chromium	"	"	"	EPA 6010A	0.0100	ND	"	
Arsenic	0570067	5/2/97	"	EPA 7060A	0.00400	**0.00510**	"	
Lead	"	"	5/2/97	EPA 7421	0.00200	ND	"	
Mercury	0570367	5/14/97	5/14/97	EPA 7470A	0.00100	ND	"	
Selenium	0570067	5/2/97	5/9/97	EPA 7740	0.00500	ND	"	
Silver	0570369	5/12/97	5/14/97	EPA 7760A	0.0200	ND	"	
LC-MW2-050197			**B705030-02**				**Water**	
Barium	0570087	5/5/97	5/6/97	EPA 6010A	0.0100	ND	mg/l	
Cadmium	"	"	"	EPA 6010A	0.00500	ND	"	
Chromium	"	"	"	EPA 6010A	0.0100	ND	"	
Arsenic	0570067	5/2/97	"	EPA 7060A	0.00400	**0.00790**	"	
Lead	"	"	5/2/97	EPA 7421	0.00200	ND	"	
Mercury	0570367	5/14/97	5/14/97	EPA 7470A	0.00100	ND	"	
Selenium	0570067	5/2/97	5/9/97	EPA 7740	0.00500	ND	"	
Silver	0570369	5/12/97	5/14/97	EPA 7760A	0.0200	ND	"	
LC-MW3-050197			**B705030-03**				**Water**	
Barium	0570087	5/5/97	5/6/97	EPA 6010A	0.0100	ND	mg/l	
Cadmium	"	"	"	EPA 6010A	0.00500	ND	"	
Chromium	"	"	"	EPA 6010A	0.0100	ND	"	
Arsenic	0570067	5/2/97	"	EPA 7060A	0.00400	ND	"	
Lead	"	"	5/2/97	EPA 7421	0.00200	**0.00210**	"	
Mercury	0570367	5/14/97	5/14/97	EPA 7470A	0.00100	ND	"	
Selenium	0570067	5/2/97	5/9/97	EPA 7740	0.00500	ND	"	
Silver	0570369	5/12/97	5/14/97	EPA 7760A	0.0200	ND	"	
LC-MW4-050197			**B705030-04**				**Water**	
Barium	0570087	5/5/97	5/6/97	EPA 6010A	0.0100	ND	mg/l	
Cadmium	"	"	"	EPA 6010A	0.00500	ND	"	
Chromium	"	"	"	EPA 6010A	0.0100	ND	"	
Arsenic	0570067	5/2/97	"	EPA 7060A	0.00400	**0.00540**	"	
Lead	"	"	5/2/97	EPA 7421	0.00200	**0.00397**	"	
Mercury	0570367	5/14/97	5/14/97	EPA 7470A	0.00100	ND	"	
Selenium	0570067	5/2/97	5/9/97	EPA 7740	0.00500	ND	"	
Silver	0570369	5/12/97	5/14/97	EPA 7760A	0.0200	ND	"	

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

Shannon J Stowell, Project Manager

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NORTH CREEK ANALYTICAL
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Summit Envirosolutions	Project:	Liquid Carbonic	Sampled: 5/1/97
1800 112th Ave. N.E., Ste 312	Project Number:	0841-001	Received: 5/1/97
Bellevue, WA 98004	Project Manager:	Jeff Thompson	Reported: 5/15/97 18:00

Total Metals by EPA 6010/7000 Series Methods
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Specific Method	Reporting Limit	Result	Units	Notes*
LC-MW5-050197			**B705030-05**				**Water**	
Barium	0570087	5/5/97	5/6/97	EPA 6010A	0.0100	**0.0109**	mg/l	
Cadmium	"	"	"	EPA 6010A	0.00500	ND	"	
Chromium	"	"	"	EPA 6010A	0.0100	ND	"	
Arsenic	0570067	5/2/97	"	EPA 7060A	0.00400	**0.00740**	"	
Lead	"	"	5/2/97	EPA 7421	0.00200	**0.00216**	"	
Mercury	0570367	5/14/97	5/14/97	EPA 7470A	0.00100	ND	"	
Selenium	0570067	5/2/97	5/9/97	EPA 7740	0.00500	ND	"	
Silver	0570369	5/12/97	5/14/97	EPA 7760A	0.0200	ND	"	

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Summit Envirosolutions	Project:	Liquid Carbonic	Sampled: 5/1/97
1800 112th Ave. N.E., Ste 312	Project Number:	0841-001	Received: 5/1/97
Bellevue, WA 98004	Project Manager:	Jeff Thompson	Reported: 5/15/97 18:00

Polynuclear Aromatic Compounds by EPA Method 8310
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
LC-MW1-050197			**B705030-01**				**Water**	
Acenaphthene	0570189	5/7/97	5/13/97		1.00	ND	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	5/14/97		0.100	ND	"	
Fluoranthene	"	"	5/13/97		0.100	ND	"	
Fluorene	"	"	"		1.00	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		1.00	ND	"	
Phenanthrene	"	"	"		1.00	ND	"	
Pyrene	"	"	"		1.00	ND	"	
Surrogate: 2-FBP	"	"	"	*22.0-129*		*94.4*	*%*	
LC-MW2-050197			**B705030-02**				**Water**	
Acenaphthene	0570189	5/7/97	5/13/97		1.00	ND	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	5/14/97		0.100	ND	"	
Fluoranthene	"	"	5/13/97		0.100	ND	"	
Fluorene	"	"	"		1.00	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		1.00	ND	"	
Phenanthrene	"	"	"		1.00	ND	"	
Pyrene	"	"	"		1.00	ND	"	
Surrogate: 2-FBP	"	"	"	*22.0-129*		*94.0*	*%*	

North Creek Analytical, Inc.

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Shannon J Stowell, Project Manager

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Bellevue, WA 98004	Project Manager:	Jeff Thompson	Reported: 5/15/97 18:00

Polynuclear Aromatic Compounds by EPA Method 8310
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
LC-MW3-050197			**B705030-03**				**Water**	
Acenaphthene	0570189	5/7/97	5/14/97		1.00	ND	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.100	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		1.00	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		1.00	ND	"	
Phenanthrene	"	"	"		1.00	ND	"	
Pyrene	"	"	"		1.00	ND	"	
Surrogate: 2-FBP	"	"	"	*22.0-129*		*93.8*	*%*	
LC-MW4-050197			**B705030-04**				**Water**	
Acenaphthene	0570189	5/7/97	5/14/97		1.00	ND	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.100	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		1.00	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		1.00	ND	"	
Phenanthrene	"	"	"		1.00	ND	"	
Pyrene	"	"	"		1.00	ND	"	
Surrogate: 2-FBP	"	"	"	*22.0-129*		*98.3*	*%*	

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Shannon J Stowell, Project Manager

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Summit Envirosolutions	Project:	Liquid Carbonic	Sampled: 5/1/97
1800 112th Ave. N.E., Ste 312	Project Number:	0841-001	Received: 5/1/97
Bellevue, WA 98004	Project Manager:	Jeff Thompson	Reported: 5/15/97 18:00

Polynuclear Aromatic Compounds by EPA Method 8310
North Creek Analytical - Bothell

Analyte	Batch Number	Date Prepared	Date Analyzed	Surrogate Limits	Reporting Limit	Result	Units	Notes*
LC-MW5-050197			**B705030-05**				**Water**	
Acenaphthene	0570189	5/7/97	5/14/97		1.00	ND	ug/l	
Acenaphthylene	"	"	"		1.00	ND	"	
Anthracene	"	"	"		1.00	ND	"	
Benzo (a) anthracene	"	"	"		0.100	ND	"	
Benzo (a) pyrene	"	"	"		0.100	ND	"	
Benzo (b) fluoranthene	"	"	"		0.100	ND	"	
Benzo (ghi) perylene	"	"	"		0.100	ND	"	
Benzo (k) fluoranthene	"	"	"		0.100	ND	"	
Chrysene	"	"	"		0.100	ND	"	
Dibenzo (a,h) anthracene	"	"	"		0.100	ND	"	
Fluoranthene	"	"	"		0.100	ND	"	
Fluorene	"	"	"		1.00	ND	"	
Indeno (1,2,3-cd) pyrene	"	"	"		0.100	ND	"	
Naphthalene	"	"	"		1.00	ND	"	
Phenanthrene	"	"	"		1.00	ND	"	
Pyrene	"	"	"		1.00	ND	"	
Surrogate: 2-FBP	"	"	"	*22.0-129*		*90.9*	%	

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Summit Envirosolutions	Project:	Liquid Carbonic	Sampled: 5/1/97
1800 112th Ave. N.E., Ste 312	Project Number:	0841-001	Received: 5/1/97
Bellevue, WA 98004	Project Manager:	Jeff Thompson	Reported: 5/15/97 18:00

Diesel Hydrocarbons (C12-C24) and Heavy Oil (C24-C40) by WTPH-D (extended)/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0570028	**Date Prepared: 5/2/97**					**Extraction Method: EPA 3520/600 Series**				
Blank	**0570028-BLK1**									
Diesel Range Hydrocarbons	5/5/97			ND	mg/l	0.250				
Heavy Oil Range Hydrocarbons	"			ND	"	0.750				
Surrogate: 2-FBP	"	*0.350*		*0.289*	"	*50.0-150*	*82.6*			
LCS	**0570028-BS1**									
Diesel Range Hydrocarbons	5/5/97	2.04		1.86	mg/l	52.0-131	91.2			
Surrogate: 2-FBP	"	*0.350*		*0.279*	"	*50.0-150*	*79.7*			
Duplicate	**0570028-DUP1**		**B704578-01**							
Diesel Range Hydrocarbons	5/5/97		ND	ND	mg/l			44.0		
Surrogate: 2-FBP	"	*0.700*		*0.583*	"	*50.0-150*	*83.3*			
Duplicate	**0570028-DUP2**		**B704578-02**							
Diesel Range Hydrocarbons	5/5/97		0.533	0.454	mg/l			44.0	**16.0**	
Surrogate: 2-FBP	"	*0.700*		*0.540*	"	*50.0-150*	*77.1*			

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Summit Envirosolutions	Project:	Liquid Carbonic	Sampled: 5/1/97
1800 112th Ave. N.E., Ste 312	Project Number:	0841-001	Received: 5/1/97
Bellevue, WA 98004	Project Manager:	Jeff Thompson	Reported: 5/15/97 18:00

Total Metals by EPA 6010/7000 Series Methods/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0570067	**Date Prepared: 5/2/97**					**Extraction Method: EPA 3020**				
Blank	**0570067-BLK1**									
Arsenic	5/6/97			ND	mg/l	0.00400				
Lead	5/2/97			ND	"	0.00200				
Selenium	"			ND	"	0.00500				
LCS	**0570067-BS1**									
Arsenic	5/6/97	0.0500		0.0523	mg/l	75.0-125	105			
Lead	5/2/97	0.0260		0.0243	"	75.0-125	93.5			
Selenium	"	0.0250		0.0244	"	75.0-125	97.6			
Duplicate	**0570067-DUP1**		**B704604-01**							
Arsenic	5/6/97		ND	ND	mg/l			20.0		
Lead	5/2/97		ND	ND	"			20.0		
Selenium	"		ND	ND	"			20.0		
Matrix Spike	**0570067-MS1**		**B704604-01**							
Arsenic	5/6/97	0.0500	ND	0.0513	mg/l	70.0-130	**103**			
Lead	5/2/97	0.0260	ND	0.0234	"	70.0-130	**90.0**			
Selenium	"	0.0250	ND	0.0243	"	70.0-130	**97.2**			
Matrix Spike Dup	**0570067-MSD1**		**B704604-01**							
Arsenic	5/6/97	0.0500	ND	0.0485	mg/l	70.0-130	**97.0**	20.0	**6.00**	
Lead	5/2/97	0.0260	ND	0.0235	"	70.0-130	**90.4**	20.0	**0.443**	
Selenium	"	0.0250	ND	0.0234	"	70.0-130	**93.6**	20.0	**3.77**	
Batch: 0570087	**Date Prepared: 5/5/97**					**Extraction Method: EPA 3010**				
Blank	**0570087-BLK1**									
Barium	5/6/97			ND	mg/l	0.0100				
Cadmium	"			ND	"	0.00500				
Chromium	"			ND	"	0.0100				
LCS	**0570087-BS1**									
Barium	5/6/97	1.00		0.921	mg/l	80.0-120	92.1			
Cadmium	"	1.00		0.944	"	80.0-120	94.4			
Chromium	"	1.00		0.955	"	80.0-120	95.5			
Duplicate	**0570087-DUP1**		**B704604-01**							
Barium	5/6/97		ND	ND	mg/l			20.0		

North Creek Analytical, Inc.

**Refer to end of report for text of notes and definitions.*

Shannon J Stowell, Project Manager

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Summit Envirosolutions	Project:	Liquid Carbonic	Sampled: 5/1/97
1800 112th Ave. N.E., Ste 312	Project Number:	0841-001	Received: 5/1/97
Bellevue, WA 98004	Project Manager:	Jeff Thompson	Reported: 5/15/97 18:00

Total Metals by EPA 6010/7000 Series Methods/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Duplicate (continued)	**0570087-DUP1**		**B704604-01**							
Cadmium	5/6/97		ND	ND	mg/l			20.0		
Chromium	"		ND	ND	"			20.0		
Matrix Spike	**0570087-MS1**		**B704604-01**							
Barium	5/6/97	1.00	ND	0.901	mg/l	80.0-120	**90.1**			
Cadmium	"	1.00	ND	0.932	"	80.0-120	**93.2**			
Chromium	"	1.00	ND	0.935	"	80.0-120	**93.5**			
Matrix Spike Dup	**0570087-MSD1**		**B704604-01**							
Barium	5/6/97	1.00	ND	0.887	mg/l	80.0-120	**88.7**	20.0	1.57	
Cadmium	"	1.00	ND	0.916	"	80.0-120	**91.6**	20.0	1.73	
Chromium	"	1.00	ND	0.918	"	80.0-120	**91.8**	20.0	1.83	
Batch: 0570367	**Date Prepared: 5/14/97**					**Extraction Method: BrCl Digestion**				
Blank	**0570367-BLK1**									
Mercury	5/14/97			**ND**	mg/l	**0.00100**				
LCS	**0570367-BS1**									
Mercury	5/14/97	0.00500		0.00468	mg/l	70.0-130	93.6			
Duplicate	**0570367-DUP1**		**B705030-01**							
Mercury	5/14/97		ND	ND	mg/l			20.0		
Matrix Spike	**0570367-MS1**		**B705030-01**							
Mercury	5/14/97	0.00500	ND	0.00466	mg/l	75.0-125	**93.2**			
Matrix Spike Dup	**0570367-MSD1**		**B705030-01**							
Mercury	5/14/97	0.00500	ND	0.00490	mg/l	75.0-125	**98.0**	20.0	5.02	
Batch: 0570369	**Date Prepared: 5/12/97**					**Extraction Method: EPA 3010**				
Blank	**0570369-BLK1**									
Silver	5/14/97			**ND**	mg/l	**0.0200**				
LCS	**0570369-BS1**									
Silver	5/14/97	1.00		0.920	mg/l	75.0-125	92.0			
Duplicate	**0570369-DUP1**		**B705030-01**							
Silver	5/14/97		ND	ND	mg/l			20.0		

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

BOTHELL ■ (206) 481-9200 ■ FAX 485-2992
SPOKANE ■ (509) 924-9200 ■ FAX 924-9290
PORTLAND ■ (503) 643-9200 ■ FAX 644-2202

Summit Envirosolutions	Project:	Liquid Carbonic	Sampled: 5/1/97
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Bellevue, WA 98004	Project Manager:	Jeff Thompson	Reported: 5/15/97 18:00

Total Metals by EPA 6010/7000 Series Methods/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Matrix Spike	0570369-MS1		B705030-01							
Silver	5/14/97	1.00	ND	0.916	mg/l	75.0-125	**91.6**			
Matrix Spike Dup	0570369-MSD1		B705030-01							
Silver	5/14/97	1.00	ND	0.902	mg/l	75.0-125	**90.2**	20.0	**1.54**	

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Summit Envirosolutions	Project:	Liquid Carbonic	Sampled: 5/1/97
1800 112th Ave. N.E., Ste 312	Project Number:	0841-001	Received: 5/1/97
Bellevue, WA 98004	Project Manager:	Jeff Thompson	Reported: 5/15/97 18:00

Polynuclear Aromatic Compounds by EPA Method 8310/Quality Control
North Creek Analytical - Bothell

Analyte	Date Analyzed	Spike Level	Sample Result	QC Result	Units	Reporting Limit / Recov. Limits	Recov. %	RPD Limit	RPD %	Notes*
Batch: 0570189	**Date Prepared: 5/7/97**					**Extraction Method: EPA 3520/600 Series**				
Blank	**0570189-BLK1**									
Acenaphthene	5/13/97			ND	ug/l	1.00				
Acenaphthylene	"			ND	"	1.00				
Anthracene	"			ND	"	1.00				
Benzo (a) anthracene	"			ND	"	0.100				
Benzo (a) pyrene	"			ND	"	0.100				
Benzo (b) fluoranthene	"			ND	"	0.100				
Benzo (ghi) perylene	"			ND	"	0.100				
Benzo (k) fluoranthene	"			ND	"	0.100				
Chrysene	"			ND	"	0.100				
Dibenzo (a,h) anthracene	"			ND	"	0.100				
Fluoranthene	"			ND	"	0.100				
Fluorene	"			ND	"	1.00				
Indeno (1,2,3-cd) pyrene	"			ND	"	0.100				
Naphthalene	"			ND	"	1.00				
Phenanthrene	"			ND	"	1.00				
Pyrene	"			ND	"	1.00				
Surrogate: 2-FBP	"	*51.0*		*49.9*	"	*22.0-129*	*97.8*			
LCS	**0570189-BS1**									
Chrysene	5/13/97	10.0		9.88	ug/l	16.0-113	98.8			
Fluorene	"	10.0		9.76	"	19.0-124	97.6			
Indeno (1,2,3-cd) pyrene	"	10.0		5.98	"	15.0-137	59.8			
Surrogate: 2-FBP	"	*51.0*		*53.5*	"	*22.0-129*	*105*			
LCS Dup	**0570189-BSD1**									
Chrysene	5/13/97	10.0		10.8	ug/l	16.0-113	108	27.0	8.90	
Fluorene	"	10.0		9.62	"	19.0-124	96.2	39.0	1.44	
Indeno (1,2,3-cd) pyrene	"	10.0		6.96	"	15.0-137	69.6	28.0	15.1	
Surrogate: 2-FBP	"	*51.0*		*50.7*	"	*22.0-129*	*99.4*			

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Summit Envirosolutions	Project:	Liquid Carbonic	Sampled: 5/1/97
1800 112th Ave. N.E., Ste 312	Project Number:	0841-001	Received: 5/1/97
Bellevue, WA 98004	Project Manager:	Jeff Thompson	Reported: 5/15/97 18:00

Notes and Definitions

#	Note
1	The sample chromatographic pattern does not resemble the fuel standard used for quantitation.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
Recov.	Recovery
RPD	Relative Percent Difference

NORTH CREEK ANALYTICAL
Environmental Laboratory Services

18939 120th Avenue N.E., Suite 101, Bothell, WA 98011-9508 (206) 481-9200 FAX 485-2992
East 11115 Montgomery, Suite B, Spokane, WA 99206-4779 (509) 924-9200 FAX 924-9290
9405 S.W. Nimbus Avenue, Beaverton, OR 97008-7132 (503) 643-9200 FAX 644-2202

CHAIN OF CUSTODY REPORT

Work Order # 9705030

REPORT TO: SUMMIT ENVIROSOLUTIONS
ATTENTION: JEFF THOMPSON
ADDRESS: 1800-112th AVE N.E. Ste 312
BELLEVUE, WA 98004
PHONE: (425) 646-0808 FAX: (425) 646-0888
PROJECT NAME: LIQUID CARBONIC
PROJECT NUMBER: 0841-001
SAMPLED BY: Jeffrey S. Pernosky

INVOICE TO: SUMMIT ENVIROSOLUTIONS
ATTENTION: JEFF THOMPSON
ADDRESS: 1800-112th AVE NE Ste 312
BELLEVUE, WA 98004
P.O. NUMBER: 0841-001 NCA QUOTE #:

TURNAROUND REQUEST in Business Days *
Organic & Inorganic Analyses: [10] Standard | 7 | 5 | 4 | 3 | 2 | 1 | Same Day
Fuels & Hydrocarbon Analyses: [5] Standard | 3-4 | 2 | 1 | Same Day
STANDARD
OTHER Specify:
* Turnaround Requests less than standard may incur Rush Charges.

	CLIENT SAMPLE IDENTIFICATION	SAMPLING DATE/TIME	NCA SAMPLE ID (LABORATORY USE ONLY)	WTPH-D Extended	EPA 8310 PAHs (8)	RCRA (8) Total Metals	MATRIX (W, S, A, O)	# OF CONTAINERS	COMMENTS
1.	LC-MW1-050197	5/1/97-1045	9705030-01	✓	✓	✓	W	4	2-1 liter amb (unpreserved) 1-500ml poly (nitric Acid)
2.	LC-MW2-050197	-1345	-02						
3.	LC-MW3-050197	-1130	-03						
4.	LC-MW4-050197	-1215	-04						
5.	LC-MW5-050197	-1300	-05						
6.				LAST ITEM					
7.									
8.									
9.									
10.									

RELINQUISHED BY (Signature): Jeffrey S. Pernosky DATE: 5/1/97
PRINT NAME: JEFFREY S. PERNOSKY FIRM: SUMMIT TIME: 1435

RECEIVED BY (Signature): Dana Heins DATE: 5/1/97
PRINT NAME: DANA HEINS FIRM: NCA TIME: 1435

RELINQUISHED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

RECEIVED BY (Signature): DATE:
PRINT NAME: FIRM: TIME:

ADDITIONAL REMARKS: